



# Mulch-Till Residue Management

*Conservation Practice Job Sheet*

**329B**

**Natural Resources Conservation Service (NRCS)**

**August 1998**

Landowner \_\_\_\_\_



## What is Mulch-Till?

Mulch-till systems manage the amount, orientation, and distribution of crop and other residue on the soil surface year-round, while growing crops where the entire soil surface is tilled prior to or during the planting operation. Residue is partially incorporated using chisels, sweeps, field cultivators, or similar implements.

## Purposes

Mulch-till systems can be designed to accomplish one or more of the following conservation purposes:

- Reduce water erosion
- Reduce wind erosion
- Maintain or increase soil organic matter and soil tilth
- Conserve soil moisture

- Manage snow to increase plant available moisture
- Provide food and escape cover for wildlife

## Secondary Benefits

- Water quality improves both onsite and offsite.
- Air quality improves both onsite and offsite.
- Sedimentation is reduced.

## Conservation Management Systems

Mulch tillage is normally used as a component of a conservation management system. It should be used in conjunction with Crop Rotation, Nutrient Management, Pest Management, the Buffer Practices, and other practices needed on a site specific basis to address natural resource concerns and the landowner's objectives. Major roles of the mulch-

till component of a system include providing soil protection, reducing runoff, and improving soil tilth by allowing the soil to accumulate more organic matter.

## Practice Specifications

Practice specifications are provided to assure the mulch-till system meets the resource needs and producer's objectives. The specifications are based on the amount, timing, and orientation of crop residue left on the soil surface. These requirements are recorded in table 1. Supporting information may be included in tables 2 and 3. Residue retention calculations recorded in table 3 are estimates to determine whether the planned number, sequence, and timing of farming operations will leave the specified amounts of residue. (Residue calculations are estimates highly dependent on such variables as operating speed, depth, field conditions, and adjustments.)

## General Specifications

### *applicable to all practice purposes*

- Residue to be retained on the field shall be uniformly distributed. Combines or other harvesting machines shall be equipped with spreaders capable of spreading residue over at least 80 percent of the combine header width.
- Secondary removal of crop residue by baling or grazing shall be limited to retain the amount of residue needed to achieve the intended purpose(s).
- Residue shall not be burned.
- Anhydrous injectors, manure injectors, and similar equipment may need to be modified to operate in high residue situations.
- Tillage implements, such as field cultivators, chisels, or similar tools, should be selected and operated to leave a specified amount of residue on the soil surface.
- Planting implements should be equipped with coulters and disk openers designed to cut through surface residue.
- Row cleaners may be attached to the planters to move residue out of the row area and help warm and dry the seedbed.

## Additional Specifications

### *applicable to purposes identified during planning*

#### **Reduce erosion from wind and water, and improve water and air quality**

The specified amount, timing, and orientation of residue will be in accordance with site specific data recorded in table 1. Current wind and water erosion technology will be used to establish minimum specifications.

#### **Maintain or increase soil organic matter content**

Tillage aerates the soil and increases decomposition of organic matter. Mulch-till reduces tillage and leaves the necessary amount of residue on or near the soil surface for soil improvement. The required amounts of residue for soil protection are specified in table 1. Tables 2 and 3 can be used to plan and record the crops, field operations, and management necessary to achieve a positive trend in soil organic matter content based on the NRCS Soil Condition Index (SCI) procedure described in the National Agronomy Manual.

#### **Conserve moisture**

Residue shall be evenly distributed and maintained on the soil surface during the growing season or fallow period to retain soil moisture for crop use by enhancing infiltration and reducing evaporation. A minimum of 50 percent surface residue cover is required to significantly reduce surface evaporation.

#### **Manage snow**

Maintain 6 inches standing stubble over winter to catch and retain snow cover. Operations that flatten or partly bury residue should be delayed until spring to achieve the stubble requirements for this purpose.

#### **Provide food and cover for wildlife**

The amount of residue, height of stubble, and time requirements to meet the minimum needs of the target wildlife species are specified in table 1. This information is based on a wildlife habitat index procedure.

***Record planned practice specifications in table 1. Tables 2 and 3 and figures 1 and 2 are for optional use when more detailed planning or design information is needed.***

The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotope, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th & Independence Ave., SW. Washington, D.C., 20250-9410 or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.